

The Chronicle

of the Early American Industries Association, Inc.

Volume IV

July, 1951

Number 3

Hoofbeats of Destiny

by ANNA K. CUNNINGHAM

This is the story of Henry Burden, a young Scotch-immigrant engineer of Troy, New York, who was the first man in America to devise a mass production method for a transportation necessity. He invented a machine which could make a horseshoe from a bar of iron in four seconds.

Across the Forth River from Scotland's ancient capital of Stirling, and somewhat west of the road that runs north from Glasgow to Perth, lies the little town of Dunblane. This was the home of the Burden family—the father was a yeoman farmer—and here on the family homestead Henry Burden was born April 22, 1791.

He was an inventive genius even as a boy working around the farm. He figured out a better method of threshing; he tinkered and mended farm equipment, the neighbors' as well as the Burden's. As he grew older, he wanted to become a trained engineer; so evenings he went to the home of a local scholar, William Hawley, whom the countryside had long respected as an accomplished arithmetician. In the daytime, young Burden was busy erecting grist mills and making various farm implements. The pupil soon outstripped the master and went on to Edinburgh to study engineering, mathematics and drawing.

Equipped with letters of introduction to United States Senators Thomas Benton and John Calhoun and to Stephen Van Rensselaer of the powerful patroon family, Henry Burden landed in America in 1819 and went to work for the Townsend and Corning Iron Shops of Albany, New York. Twenty-eight years of age at this time, a trained and seasoned engineer, it was said of him later, "An accomplished mechanic, he could make a better piece of work than any man he could find in his shops; he could deal a heavier blow with the sledge

than any of his strikers at the forge. Thus physically favored, his business forecast was only equalled by his genius for invention, and his productions and triumphs are acknowledged as among the most important and revolutionary known to the history of iron manufacture."

Across the river from Albany, in the early 1800's, a little mill, known as the "Troy Iron and Nail Factory," had been started by a local stock company. Three years after he came to work in Albany, the stockholders of the Troy mill asked young Burden, who meanwhile had been winning prizes at county fairs with improved agricultural equipment, to take over the superintendency there. And from this small beginning was to grow the giant Burden Iron Works so vital to the Federal Government during the Civil War.

So important was this single plant in the turbulent 1860's that at one time the United States government contemplated a step regarding it which was eventually to be taken with the railroads during World War I—government management. So coveted were the secrets of the Burden Iron Works that the Confederacy in its last dark days was to hatch a plot to infiltrate spies at the Troy plant to learn them.

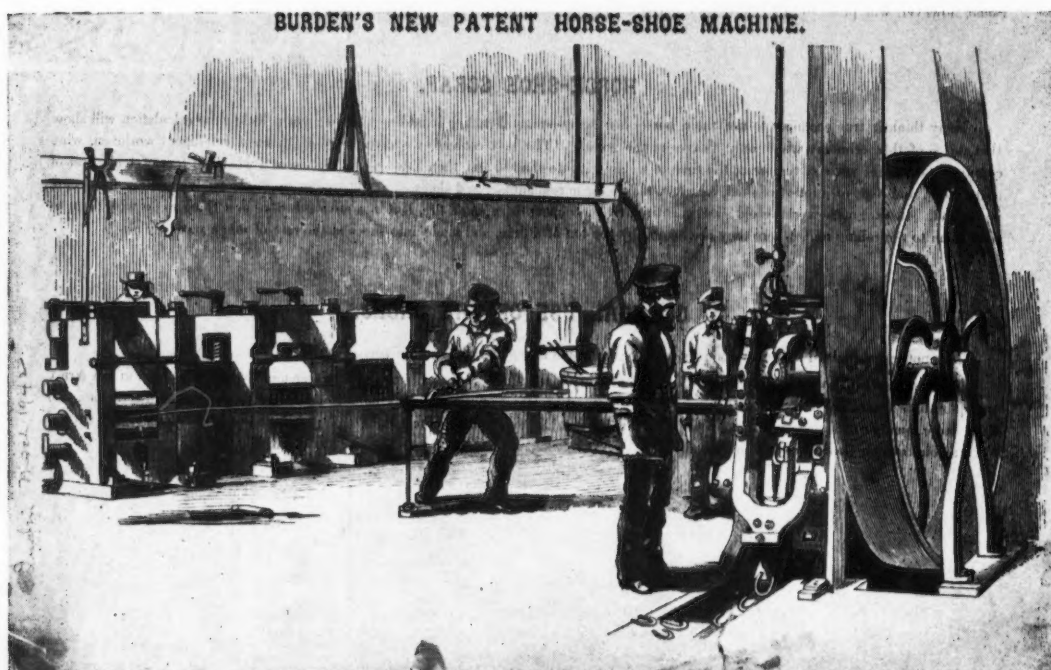
But in 1822 it was just a little nail factory with insufficient waterpower. And a new superintendent who had a thousand ideas. He had been mulling many of them over for a long time and was still to work long years on some of them. One of his pet theories was that horseshoes could be made mechanically.

Up until the invention of the Burden machine, horseshoes were pounded out by the blacksmith by hand on his anvil. But it was a slow way to make a much-needed article. And so the young superintendent of the little Troy Iron and Nail Factory set to work figuring, drawing and re-figuring. In 1835, the United

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States Patent Office issued to "Henry Burden, of Troy, New York, Letters Patent," covering a "Machine for Making Horseshoes." America, and the world, would move faster now that old Dobbin could be more quickly shod.

movements of the Civil War, and they were advantageous to Federal strategy, could not have been made. Nor could the wagon trains with the Union provisions have moved so readily, for, except during the first few months of war, the Federal Blue was an invading army.



Henry Burden perfected his patent as the years passed. He wanted to construct a machine which could take a bar of iron from the roll-train and finish a shoe without re-heating. So, in 1843 he added improvements to his original design, which reduced the operations to two movements; and again in 1857, whereby, after receiving the heated bar, the machine cut, bent and forged it into a perfectly shaped shoe in one movement. Indeed, his last of many patents, in 1862, was that for final improvement on the horseshoe machine.

In an age of radar, armored tanks and atomic power, to mention the political importance of manufacturing horseshoes by machinery may seem like a bit of local boasting, but if Henry Burden had not discovered this mechanical method by which hundreds of thousands of sets of shoes could be made for the great number of horses and mules used by the Northern armies, it is very likely that some of the most important cavalry

It might be said that in a large measure the success of the Union army rode upon the famous Burden horseshoe.

The Burden Iron Company sent a replica of this first horseshoe machine to the Centennial Exposition in Philadelphia in 1876. It was badly placed and to this circumstance we are indebted for a particularly clear, non-technical, description of the machine which an irate NEW YORK TIMES reporter wrote and his newspaper published. He said:

I do not propose to let this perfect piece of machinery remain hidden away, and in case it be too late to have it installed in its proper position in Machinery Hall, which ought surely not to be the case, I will tell the readers of "The New York Times" all about it and its wonderful doings. In the first place the ordinary working machine is neither large nor complicated. On the contrary its simplicity is one of its leading features. The two things

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about it which first strike the eye are some wheels and a long reheating furnace adjoining them, the latter looking very much like a horizontally built chimney. Bars of iron forty feet in length are brought hot from the rolling mill and are placed in the reheating furnace for the purpose of annealing the iron. As soon as this process is completed, the bar of iron is passed into the machine through two rollers, which act as automatic feeders, the rollers being kept in constant pressure on the bar by an attachment to the cutting lever, which, working on a cam, cuts off the bar just the necessary length of iron to make one horseshoe. At the moment of cutting off, the bending tongue catches the piece cut off and carries it into the first die, which gives the shape and form to the shoe. It then passed on to another roll and shaft, called the creasing shaft, on which is a die to which the creasers are attached, and by means of which the creasing of the shoe is produced, while, at the same time, the holes for the nails are pierced. Here is then a finished shoe for horse or mule, which has only to be heated and fitted by the local blacksmith before being used. One great advantage of this machine is that any shoe of any shape, size or pattern can be made upon it with the utmost ease. A buyer may send a shoe of peculiar pattern, and one which would puzzle a blacksmith to make, with a secret private mark upon it, accompanied by an order. His orders, no matter if it amounts to 1,000 tons, will be delivered to him exactly to his pattern; any possible variation in a single shoe in the whole consignment requiring a microscope to discover it.

When the Burden horseshoe machine was first put into operation and word spread abroad of the new invention, the countryside flocked around to see it work and marvel at it. Production at the mill soared. A capacity of 51,000,000 shoes annually was to be

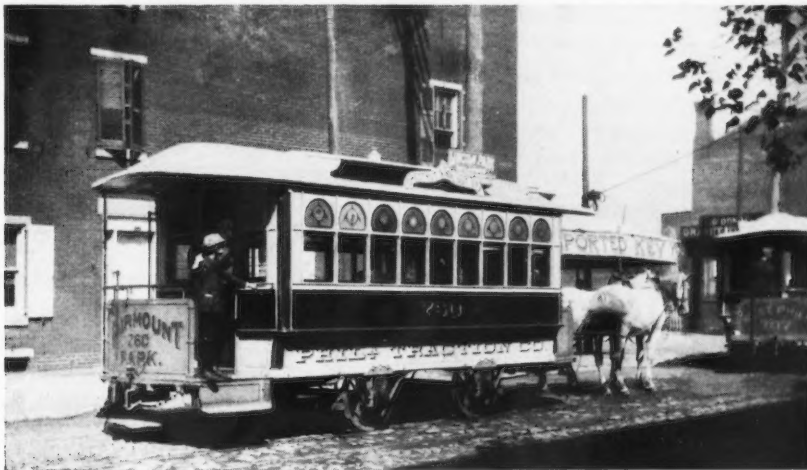
achieved as the years passed. Two storage warehouses with space for 250,000 kegs of shoes were built. Nine machines were in operation, each ultimately making sixty shoes a minute. An army of more than twelve million horses could be shod every year with the product of the Burden Works. Where were these shoes sold? Everywhere throughout the United States and Canada. On a loading platform of the warehouse one day might be seen hundreds of kegs tagged "San Francisco, California;" on another, a shipment consigned to "Portland, Oregon." Western desperadoes probably "went thattaway" riding hell for leather on Burden horseshoes.

Today, on Mill Street in Troy, not too far from the old Wynantskill that long ago furnished power for the little Troy Iron and Nail Factory, there is a bronze tablet on which is this inscription:

Near This Place
in
1835, 1843, 1857
HENRY BURDEN
(1791-1871)

First operated machines which he had invented for the manufacture of horseshoes and which became an important factor in the Civil and Military development of the Country.

Miss Cunningham is Curator of History at the University of the State of New York.



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Tools and Trade

A column, not for advertising, but a clearing house, to make available to members, some of the tools that turn up here and there.

by JANET R. MACFARLANE

We have had a good response to the first "Tools and Trade" column and plan to continue this service to the membership. Prices will not enter this column. That is between you and the seller. All I ask is a postal card inquiry for a name and address and you will get it at once. It is wise to inquire by number.

8. A Chicago advertising firm has been sending things our way, most of which are large items which require room to house. One is a grain drill shown at the Centennial Exposition in Philadelphia in 1876 which later found its way to a Pennsylvania farm. Patent dates on it run earlier.

9. A woman in Rhineback, N. Y., has a tin heating unit which has handles to lift it and a drop front so that it can be used as a warming stove; over-all 21" high.

10. In Scotia, right near by Schenectady, N. Y., is an eagle weathervane and ox yoke, as well as a coffee mill and other things.

11. There is a collection of more than fifty pieces which will be sold singly or as a collection if anyone wants long blacksmith pliers, pot augers, brass level, a complete cooper's outfit, chisels, riving tools, spoke shaves, iron hammer carried from Pennsylvania to North Carolina by ox-cart, harness bench, and so on.

12. A revolving hay rake is pretty big for most collectors but if you have a spot on your lawn or out under the shed that would take it, it is worth saving. It is in Michigan, right close to some of our members.

13. A man offers a sleigh which his father used to court his mother. It is a two-seater complete with whippletrees and thills. He also has a modern cutter on springs. They are at Summit, New York.

14. Down in Jamaica there is a lathe, carpenter's bench vise, soldering iron and ladle, wooden clamps, gimlets and other tools that supposedly date back to 1841.

15. If anyone is interested in putting money into a stump-puller, there is one, horse-drawn, situated 200 miles north of the border in Canada. Over-all dimensions are 17' x 12' x 10', and it has a price on it. We will be glad to give you facts and figures.

Does anyone have a left-handed mustache cup? I know a collector who wants one.

If any EAIA members have double items and want to swap, write to me at the Farmers' Museum, Coopers-town, New York.

The "Not a Pea-Sheller" on page 20 of the April *Chronicle* turned out to be a stretcher for rug braids, curving one side for easy sewing in a circle or oval.

Grain Cradle

The Grain Cradle is supposed to be a New England invention of the year 1776, but we do not know the inventor. However, it constituted an epoch-making advance over all former harvesting implements and has been declared a greater stroke of absolute genius than the self-rake reaper or the binder.

A little more than a century ago it was the almost universal implement of the harvest, for even with the invention of the reaping machine, the cradle held the field until after the Civil War.

Contrary to what might be imagined today the cutting of grain with a cradle was by no means a slow process. Under favorable conditions a good man could cut four acres of grain in a day and more of oats and buckwheat than of wheat or rye. Of course there have been stories that seven acres were the result of one day's labor, but that was probably exaggerated.

Mowing grass with a scythe was a much slower job; perhaps on the average hardly more than one-half the above acreage could be covered. The man with the scythe has to take a narrower swath, and cannot reach so far at each clip. The cradle is a heavier tool to swing, but the grain being cut with a long stubble requires much less power. Many men have declared that they enjoyed cradling, but mowing was by common consent a grueling task.

Cradling is exhausting labor but performed by a man who is experienced it is a beautiful exhibition. A band of well-matched cradlers going down a field of golden grain has all the rhythmical measured swing of an eight-oared crew, and it is the hope of EAIA that such a crew can be got together to record the spectacle in motion pictures before the knowledge of swinging a cradle is entirely lost.

Look carefully at the next grain cradle you see in someone's collection. Making it was a job calling for a very high degree of mechanical skill, for it had to be slender, yet tough, light and elastic, and the proper "hang" was a triumph for the maker.

Early American Industries

The Gager

(Gager)

by LAWRENCE B. ROMAINE

I have been through a dozen New Bedford Directories, wherein are to be found shipwrights, painters, master mariners, harpooners, mates, coopers, sailmakers, boatbuilders, blacksmiths, seamen and all the other members of the Whaling Industry in profusion—BUT very few GAGERS. One may read through from 1836 to 1860 and find one Gager to a hundred harpooners, masters, shipwrights, etc., etc. Clifford Ashley, in his *Yankee Whaler*, gives him a few lines but (I think) neglects him woefully though he does include excellent details on the cooper to whom the gager was indebted for his apprenticeship.

Albert Cook Church in his *Whale Ships and Whaling* shows one gager taking oil from a cask for gauging. The only other reference I can find (courtesy of Curator Tripp of the Bourne Whaling Museum of the old Dartmouth Historical Society) is in *Harpers New Monthly Magazine*, Volume 21, June, 1860, page 9 of *A Summer in New England*, wherein the text is amusing but unproductive, except for an excellent wood cut of a wharf loaded with casks from a whaler just in, with gagers at work, using some of the gauges shown in the photograph.

Mr. Tripp assures me that the "Gager" was a gentleman and a scholar and highly considered in all whaling ports, being the most important "landlubber" of the entire industry.

The most interesting trades are surely those about which the least is known—and yet, even with Mr. Tripp behind me I hesitate to write an article that purports to educate others, with so few facts already in print. Bear with me, and if I should make mistakes, remember "T's better to have . . ." I could write pages about the American Whaler, but all this you may find elsewhere. Perhaps I should hunt further—somewhere hidden in a periodical or volume of the last century, there may well be a complete story of the gager and an explanation of his work.

By way of further introducing the gager (as spelled in the New Bedford Directories), I should like to quote from Clifford Ashley's *Yankee Whaler* to show that his was NOT the task of merely measuring what we know as barrels, but casks and containers for oils

of various densities and quality that required a real master to cope with. For those who may not know the Whaling picture, let me mention here that "longshore" whaling started in America with the very first settlers and that American Whaling which eventually sailed the Seven Seas and covered more Ocean sweeps than any other branch in the history of navigation of the World, ended due to the discovery of "coal oil" and other developments about 1875.

From the "Yankee Whaler"—

"About the most important single article aboard the Whaler was the cask, and, one of most important men, the cooper . . . An astonishing number of the articles of ship's furniture bore evidence of the cooper's trade: Line-tubs, water-breakers, piggins, lantern-kegs, mess-kits, mess-buckets, deck-buckets, harness-casks, slush-tubs, wash-tubs, coolers, firkins and case-buckets. The largest casks would hold as much as *fourteen barrels* and weighed two tons when full. They were made in two lengths, 46 and 52 inches, the largest being 48 inches across the head; the smallest no more than 6 inches across the head and holding a mere barrel, after called a "ryer." Until the end of the industry, all casks were made in a cooper's shop ENTIRELY BY HAND."

Mr. Ashley's observations on the number and size of casks should make it very clear just how important it must have been to have a "governor" to watch over the measures and quantities of oil delivered and sold. A good cooper must have known pretty well what given measurements in "staves" etc. would hold; but in hanc work, no two barrels or casks COULD have been exactly alike.

And now to the photograph of the only original Gager's chest I have been able to locate. The Bourne Whaling Museum, the Mariner's Museum and the Marine Historical Society, all have various examples of the gager's tools but to the best of my knowledge, not a complete set in a chest as pictured. If only the craftsman had stamped or carved his name on the lid, I might have been able to trace a Grandson. As it is, there are but two names carved in one of the smaller gauges and I imagine they were done by apprentices as I can find no heirs in New Bedford at the moment.

The following is as accurate as I can make it, and for the omissions I apologize:

Original pine chest (ca. 1850) with original hinges bordered or moulded lid in good state of preservation measuring 49½ inches long, 10 inches wide and 3½ inches deep. I think most of the instruments are visible as follows:

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No. 1 Home made octagonal gauge, hand whittled with a set of numbers on all eight sides, notched for wire or string with which to drop in the cask and withdraw for calculations.

NOTE: Since there are many of these gauges with similar sets of numerals for the same purpose, let me try to explain their use. Perhaps you have seen slide rules, and also the rules used by woodsmen and lumbermen for quick calculations. These can be understood by the uninitiated only partially. The gauge is dropped in the barrel or cask, the oil shows at a certain figure, and knowing the outside and overall measurements, the gager can estimate the amount of oil contained therein. Each side, whether eight sides or four sides, represents the set of figures to be used on the cask indicated at the top of the gauge, as:—

Bar'l. 16.b.d.; Bar'l. 32; Tierce 42; Pipe 120;

Hog'd. 120; Hog'd. 140; Punc. etc., etc.

For small casks, or for large casks practically full, the short gauges are used, and naturally the larger ones, where there is little oil in a huge cask. To give you an idea of the mathematics necessary, the smallest gauge, about 18 inches long, has 385 numerals to reckon! Want to try one?

No. 2 Brass mounted adjustable gauge for oil content. The center adjustable or moveable member runs smoothly still, being still well oiled although a bit sticky. (I would not recommend whale oil for a fine finish but it surely is a fine preservative.) This could measure the largest cask with ease and could be caught on the bung for more accurate measurements of oil content.

No. 3 Brass mounted adjustable gauge for outside measures only. This gauge is a fine example, and, like the above No. 2 was made by "KUNZ, Maker, 160 Water Street, New York." This one could measure from the center of a cask, as you can see, as well as from rim to rim, thus covering every possible deviation in size.

No. 4 The familiar "bung-starter" I need not explain. Well worn and used!

No. 5 Many of you are familiar with "scribes" and "scribers." These were I think, used in other trades for marking logs, lumber, etc. The set here pictured is a nice collection of what one man used in one trade. Each has a slightly different number, some adjustable, for making different letters, numerals and characters with better results. Two are

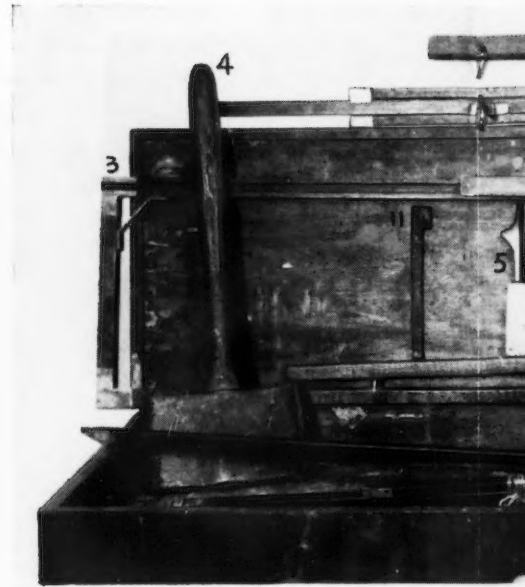
made of whale teeth with brass mounts, and are very unusual.

No. 6 Small brass container for ink or stain to put in the scribe's lettering to make the data stand out and last.

No. 7 Branding iron. Unfortunately badly rusted away and the name of our gager lost, unless we imagine that it was one of the two names carved on one of the smaller gauges—"N. Smith" or "L. Fosdick." Used by both gager and cooper on their casks.

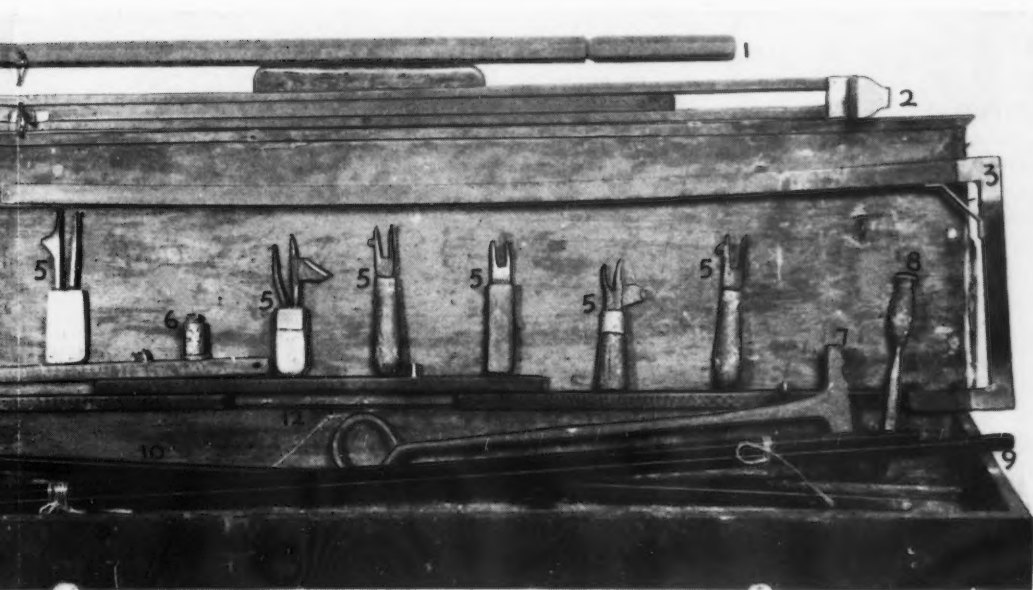
No. 8 Just a crude file, perhaps to sharpen the scribes and seam smoothers or other equipment—at any rate, very handy. Who knows but at some later date in his life, our gager might have tampered with scrimshaw for the Summer visitor!

No. 9 and 10 These are the longest gauges for the largest casks. Brass mounted, of mahogany and made by KUNZ; also "HEWITT & SON, 180 Water Street, New York." I might mention here that most of the gauges are of mahogany or walnut, except for No. 1.



Gager's pine chest

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pine chest (ca. 1850) with original hinges, and bordered or moulded lid.
Chest is 49½ inches long, 10 inches wide and 3½ inches deep.

- No. 11 An unknown quantity for some special purpose for which I shall, in my ignorance pass over lightly, hoping you will not be too inquisitive.*
- No. 12 There are four of these smallest gauges, each made by KUNZ with a brass "stop" to prevent them slipping into the cask. One of these, as observed above, contains 385 numerals. The key to the cask in question appears at the top of the gauge above the stop and indicates which set of figures are to be used on the right side.
- No. 13 The small heavy blown glass vial for taking samples does not show in the bottom of the chest. This is blown heavy at the bottom to make it sink quickly in the thick oil and with a heavy lip on which to tie a wire or string for withdrawal. According to Mr. Tripp of Old Dartmouth (who may yet hang me for some of my statements) the New Bedford gagers, usually tested the quality of the whale oil BY TASTING! In other ports it was tested as we today test the density of motor oil, by rubbing it between thumb and forefinger. This is fact and not fiction. Mr. Gifford, of the same

institution actually remembers and TASTED.

I have tried to cover the Gauger or Gager's Trade completely in a very small space and with too little research. If anyone knows or should find further data, I would very much appreciate hearing from them.

"Long years ago, a Whaler tried,
To 'make a little on the side'!
He only filled his casks half-way,
The rest was merely 'water-weigh'!"

A Gager soon his measure found—
The Whaler's plan went 'hard-aground'."

L. B. R.

*We consider this a What's it? and shall be glad to hear from anyone who can answer the question.

Has any member of EAIA a picture, drawing or photograph of a stump-puller? If so, please communicate with the editor, who would also like to have a photograph of steak tongs.

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Annual Meeting

About seventy members attended the annual meeting of the Early American Industries Association, Inc. at Monroe and Harriman, New York on June 15th and 16th.

Arriving on Friday, members registered at the Weaving Shop in the Museum Village of Smith's Clove, deposited What's It articles in the Country Store, and toured the buildings in the Village.

In the afternoon Mrs. Theodore L. Bailey's museum "Tinker House" was opened to members and they were guests at the Bailey home for tea and cocktails.

Dinner was served at the Monroe Community House at 7:00 p.m. followed by the business session, and election of directors and officers.

Dr. Sigmund Epstein of New York City gave an illustrated talk on "Early American Blacksmiths — in Picture, Song and Story," and Charles Rufus Harte of New Haven, Connecticut spoke on "Revolutionary River Obstructions" illustrated with slides.

Saturday there was more time to visit the Museum Village and the Speaker's session was held in the Country Store. Rev. A. Elwood Corning told of the restoration being done at "Temple Hill." Prof. Charles Philhower gave a brief history of the Indians of the section, and showed some of their work tools.

A box lunch was served on the Village grounds followed by the "What's It" session conducted by Mrs. Bailey. All interesting items not identified were photographed to be published in *The Chronicle* from time to time.

An interesting demonstration was given by Mr. Roy Vail of Warwick, New York, expert gunsmith and examples of his work were shown.

The meetings ended with open house at the residence of Mr. and Mrs. Roscoe W. Smith of Monroe.

Members re-elected to serve on the Board of Directors until 1954 are:

Mrs. Theodore L. Bailey, Harriman, N. Y.
Charles Rufus Harte, New Haven, Conn.
Warren C. Lane, Leicester, Mass.
Loring McMillen, Richmond, Staten Island, N. Y.
Charles Messer Stow, New York City
Mrs. George Wells, Old Sturbridge Village
Lewis N. Wiggins, Shelburne, Vermont.

New members elected to the Board are:

John Kenneth Byard, Silvermine, Norwalk, Conn.

James A. Keillor, Wading River, N. Y.

Minor W. Thomas, Williamsburg, Virginia

Officers for the ensuing year were elected as follows:

Edward Durell, Columbus, Ohio, president; Loring McMillen, Lewis N. Wiggins and George M. Simmons, Farmingdale, Long Island, N. Y., vice-presidents; Miss Janet R. MacFarlane, Cooperstown, N. Y., secretary; Mrs. Josephine H. Peirce, treasurer.

The Board voted to have the Fall Meeting in Washington, D. C. early in November.

Note: Temple Hill was the site of the last encampment ground of the American Revolutionary Army 1782 - 1783. It is in the Township of New Windsor, four miles southwest of the City of Newburgh, New York.

Chapter Meeting

The Central Massachusetts Chapter of the Early American Industries Association held a meeting at the headquarters of the Worcester Historical Society, May 25th, with 26 members present. The program began with the showing of two films, "Eighteenth Century Life in Williamsburg, Virginia," and "The Navajo Indian." The first film showed typical activities of an eighteenth century middle class family in a day from early morning until evening. The use of the many ordinary utensils of that day was fully demonstrated in kitchen and in workshop, and proved very enlightening. Street scenes, too, were made very realistic with glimpses of the stocks and pillory and lamplighter. The second film on the Navajo Indian showed the traditional ceremonial dances and parades handed down in the tribe from generation to generation.

After the showing of the films, Mrs. Josephine H. Peirce, the speaker of the evening, gave a talk on stoves of which she has made a thorough study for many years. In her talk she dwelt mainly on stoves used exclusively for heating and illustrated it by many pictures and several rare old stoves set up on the platform. Her book on the subject entitled "Fire on the Hearth," has just come out, published by The Pond-Ekberg Co., Springfield, Mass. It contains many fine illustrations of unusual old stoves and is a source of reliable information on this interesting and little known subject.

CHARLES E. AYERS, *President*

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About Books

Of interest to many members of EAIA is an 87-page book on *Five Generations of Loom Builders* with a supplement on *The Origin and Development of the Arts of Spinning and Weaving*, authored by William H. Chase, director of advertising of the Draper Corporation of Hopedale, Mass.

It is a story of loom building from the days of the craftsmanship of the hand loom weaver to the modern automatic loom of the Draper Corporation.

The first part of the book is the history of the Draper Corporation which was founded in 1816 by Ira Draper when the artisans and craftsmen of the 18th century were being succeeded by the American factory system.

The story starts in Brittany in the 11th century with an ancestor who was a weaver and fuller of cloth with the descriptive name of "Le Drapour" which in the language of that day meant "the weaver and fuller of cloth." James Draper emigrated to America in 1647; settled in Roxbury and was the first man in the American Colonies to engage in the same business. Ira was his great-great-grandson and had outstanding inventive ability in many lines, but the traditional family interest carried down through seven centuries, made him center his interest on improvements in the art of weaving.

Through five generations the family business has built looms and accessories and the main works and home office are located in Hopedale where Ebenezer D. Draper settled and built the first shop in 1841.

The second part of the book is not a history of the industry but the story of the origin of the various machines used in spinning and weaving. It required an enormous amount of research since it developed that the subject had never been treated in a comprehensive and professional manner.

Mr. Chase writes: "It is the story of the primitive tools that enabled a handicraft to produce fabrics of wonderful texture and beauty before man was able to record these achievements; the story of how man's inventive genius gradually improved these tools through the ages until he created machines capable of duplicating the skill and ingenuity of these ancient craftsmen; how that ancient handicraft thereby evolved into a great modern industry."

The book has many interesting illustrations and is attractively bound. It is privately published and copies have been given to mills and mill men and leading libraries throughout the country. Mr. Chase personally presented a copy to the Editor for inclusion in the EAIA library.

Whaling and Old Salem, a chronicle of the sea, is an exciting story of a little known activity of the Port of Salem, Massachusetts, by Frances Diane Robotti. This is her second book about Salem, undertaken after research of old documents revealed that between 1799 and 1867 there were over 80-extended whaling voyages recorded out of Salem.

Salem really whaled before 1690 but it wasn't until 1830 that it received an impetus as a result of the opening of the Erie Canal and the introduction of the railroads which detracted transportation from Salem's harbor.

Excerpts from the daily whaling journals of the Barque *Emerald*, the Barque *Reaper* and the Ship *Izette* give exciting glimpses of the captures executed by Salem whaling teams. Feats of strength and daring were performed by officers and crews from light rowboats with hand harpoons and lances.

The book is well documented and copiously illustrated. Vessels and names are separately indexed and a supplement gives more interesting information about whaling outside Salem.

Whaling and Old Salem. Frances Diane Robotti. Foreword by Carleton D. Morse. Newcomb & Gauss Company, Salem. xvi and 192 pp., 38 ill. \$3.50 cloth, \$2.50 papers.

To Make Crayons for Blackboards

Take 5 pounds of Paris white, 1 pound of Wheat flour, wet with water, and knead well; make it so stiff that it will not stick to the table, but not so stiff as to crumble and fall to pieces when it is rolled under the hand.

To roll out the crayons to proper size two boards are needed, one to roll them on; the other to roll them with. The first should be a smooth pine board 3 feet long and 9 inches wide. The other should also be pine, a foot long and 9 inches wide, having nailed on the under side near each edge a slip of wood $\frac{1}{3}$ inch thick, in order to raise it so much above the under board as that the crayon may lie between them without being flattened.

The mass is rolled into a ball and slices are cut from one side of it about $\frac{1}{2}$ -inch thick; these slices are again cut into strips about 4 inches long and $\frac{1}{3}$ -inch wide, and rolled separately between these boards until smooth and round.

Near at hand should be another board 3 feet long and 4 inches wide, across which each crayon, as it is made, should be laid, so that the ends may project each side—the crayons should be laid in close contact and straight. When the board is filled, the ends should be trimmed off so as to make the crayons as long as the width of the board. It is then laid in the sun, if in hot weather, or if in the winter, near a stove or fireplace, where the crayons may dry gradually, which will require 12 hours. When thoroughly dry they are ready for use.

Miss Beecher's *Domestic Receipt Book*, pp. 287-288

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Early American

Industries Association, Inc.

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men, and other workers.

EDWARD DURELL, *President*
500 Dublin Ave., Columbus, Ohio
LORING McMILLEN, *Vice-President*
Staten Island Historical Society
Richmond, Staten Island, New York
LEWIS N. WIGGINS, *Vice-President*
Shelburne Museum, Inc.
Shelburne, Vermont

MAJOR A. ERLAND GOYETTE, *Vice-President*
Peterborough, New Hampshire

MISS JANET R. MACFARLANE, *Recording Secretary*
Farmers Museum
Cooperstown, New York

MRS. IRMA P. ANDERSON, *Corresponding Secretary*
Ohio State Museum, Columbus, Ohio
MRS. FRANK D. PEIRCE, *Treasurer and Editor*
51 Paxton St., Leicester, Massachusetts

Communications regarding the contents of THE CHRONICLE should be addressed to the Editor; regarding back numbers to Loring McMillen; suggestions for members to any of the Officers; all other matters to the President. Addresses as here given.

DUES

The annual dues are payable January 1st, and are as follows. Regular members, \$3.00; Supporting members, \$5.00; Sustaining members, \$10.00 and up. There is no distinction between classes, except the amount of dues, but THE CHRONICLE cannot be financed unless a considerable number of the members pay more than \$3.00. Each member is expected to voluntarily place himself in the class which represents the amount he is willing to contribute to the support of the Association for the current year. Life membership costs \$50.00. THE CHRONICLE is sent to all members without additional charge.

Editor's Comment:

The Chronicle had gone to press before the annual meeting, leaving open only room for the editor's comment and a brief report of the meeting, so it is impossible to change the list of officers in this issue.

Another member has accepted our invitation to serve on the editorial advisory board and we are happy to add the name of Loring McMillen, director of the Staten Island Historical Society Museum.

And now we want help from members. We want more material for inclusion in our columns. The Association has never been financially in a position to pay for such material and it has been furnished by a comparatively small group of willing and conscientious workers, but we believe it to be the duty of every member either to supply a contribution of his own every now and then, or, if he does not feel equal to this, to persuade someone else to do so.

We are constantly receiving commendatory letters, and at almost every meeting of the Association, *The Chronicle* is referred to as "the tie that holds us together," but, as a whole, the members do not appear to feel the responsibility of keeping it going.

Many of our members have made independent and extensive research on subjects which interest them, and writings on these subjects are most valuable. Sometimes the researcher wants to defer his writing until he feels that he can say the last word on the subject, but the frequent result of this is that the article is never finished at all. If it should be presented with an invitation for criticism or for supplementary material, the author will receive valuable assistance toward covering the subject.

We also welcome writings that give experiences in collecting the various tools, stories of "old-timers" who knew how to use the tools, and members' recollections. Pictures which can be satisfactorily reproduced will be published within the limit of our means. Sketches should be done with Higgins or other drawing ink, and glossy photographs should not be too small.

The new "Tools and Trade" column has created a great deal of interest and should be a valuable clearing house for many duplicate items as well as tools for which you have no use, yet some one else will treasure.

The Chronicle is your publication. Use it. Ask questions in its columns, and above all else, write of the subjects that interest you—some one else will be interested as well.

Last Call for Index to Volume III

Orders for the Index number less than 100; therefore we held up the printing. If you are planning to bind your *Chronicles* you will want to have the Index, therefore please let us know at the earliest possible moment, as we do not want to print too many and have them left on our hands, neither do we want to be short, and we must decide.

Early American Industries

New Members

CONNECTICUT

- Hartford*: Everett N. Robinson, 23 Owen Street (1649)
Torrington: F. W. Fuessenick, Litchfield Road (1655)
Wilton: Mr. and Mrs. Kenneth C. Gifford, Chestnut Hill Road (1651)

CALIFORNIA

- Stockton 4*: Mrs. William T. Armstrong, 711 W. Elm Street (1654)

DISTRICT OF COLUMBIA

- Washington 16*: Louise M. Bennett, 4717 Wisconsin Avenue, N. W. (1656)

ILLINOIS

- Chicago 11*: Arnold Shircliffe, 410 No. Michigan Avenue (1663)

LOUISIANA

- New Orleans 16*: Juanita Elfert, 1122 Burgundy Street (1661)

MASSACHUSETTS

- Asby*: Leslie Jerome Mossman, "Wyndelblo" (1641)
Brookfield: Robert K. Ruggles, West Main Street (1644)
Plymouth: Ellis W. Brewster, Plymouth Cordage Company (1645)

MICHIGAN

- Detroit 2*: Detroit Historical Museum, 441 Merrick Avenue (1664)

MISSOURI

- St. Louis 5*: Henry N. Andrews, Jr., Washington University Botany School (1648)

NEW JERSEY

- East Orange*: Miss Margaret White, 65 South Harrison Street (1646)
Wildwood: Rev. Louis F. Hoffman, 4511 Pacific Avenue (1660)

NEW YORK

- Buffalo 13*: Anthony J. Ippolito, D.C., 831 Niagara Street (1650)

- Monroe*: Mrs. Edmund Seaman, 117 Maple Avenue (1647)

- Monroe*: Mr. and Mrs. Leland A. Smith, 52 Maple Avenue (1659)

- New York City*: C. Coapes Brinley, 321 East 43rd Street (1657)

- New York City 16*: Moritz Jagendorf, 150 East 39th Street (1643)

- New York City 10*: J. H. Smythe, Jr., 15 East 26th Street (1640)

OHIO

- Akron*: Frank B. Thomas, 35 South College Street (1643)

- Cincinnati*: Mrs. L. H. Gambell, Dogwood Glens, Box 44 RR 13, Mount Washington Station (1658)

- Cleveland Heights 21*: Jack L. Large, 2372 Noble Road (1652)

- Medina*: M. O. Hallock, Rear 125 North Court Street (1665)

- Shaker Heights 20*: Mrs. M. Krumhansl, 2849 Lee Road (1653)

PENNSYLVANIA

- Columbia*: Earl T. Strickler, 335 North Third Street (1666)

New members listed above are those who have joined since the Fall Meeting. It is really a small number when compared with the work Mr. Byard, membership chairman, has done.

Every member of EAIA must have friends who are tool collectors, or are interested in the early crafts and industries. Some people who are interested do not have room in which to keep collections, but we are sure they will like to know about other collections and see them at the meetings of EAIA.

In the October issue of *The Chronicle* we shall enclose new membership applications and we are asking that every member pass on at least one to a friend who will be glad to join.

However, you do not have to wait for the applications. Travelling about through the Summer you may meet many collectors who are potential members. Talk with them about EAIA and send their names to Mr. John Kenneth Byard, Silvermine, Norwalk, Connecticut.

The Chronicle

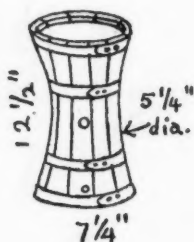
Communications

From Miner J. Cooper, Windsor, Conn.

In connection with the articles on Coopering in the last two issues of *The Chronicle* I believe members would be interested in learning of an unusual type of rum keg I have in my collection.

The staves are incurved rather than bulged as is usual. This makes it more adaptable for carrying under the arm and was undoubtedly used by harvesters.

As can be appreciated, this shape poses special problems in making, assembling and hooping and would require a higher degree of mechanical ability than usual in that several procedures would need to be reversed. Exactly how the keg was assembled and hooped is a tantalizing question. Perhaps some member can enlighten me.



Tin - Tin-Plate - Block Tin

Mrs. Bailey's article *Tin Plate and the Tinker* in the April issue of *The Chronicle* has started a discussion on the terms and definitions used.

One communication states:

"I have been unable to find any reference to tin plate being called block tin: that is 'tin plate' meaning plated tin on iron. Tin plate, in its true sense did not mean a plating of the metal on a less costly or more sturdy base. Exactly as the term silver plate meant pure silver so did early mention of tin plate mean pure, or *block tin*. Block tin was the metalcraftsman's term for the commercial pigs or ingots of nearly pure tin, which, in the case of tin were called 'blocks'."

Another:

"I am convinced that the word 'plate' in the 18th century meant ware of a solid metal. Therefore, silver plate meant solid silver and tin plate meant solid tin. With the coming of electro and other methods of laying a thin deposit of one metal on another metal, the term was twisted, and now the seasoned collector in talking of 'silver plate' doesn't mean what other collectors mean when they say 'silver plate'."

Because this is so interesting the editor looked in the files and found the following items:

Lists of kitchen utensils suggested in cook books specify that pie-dishes be made of *block-tin*. Other Tin Ware had no such specification.

No one seems to know when tin was first discovered in Cornwall, but "Truro possessed a coinage hall as early as the reign of King John (1200) where the blocks of tin were to be seen in heaps about the streets, and were left entirely unguarded, as their great weight rendered it difficult to remove them without immediate detection."

There were very few uses for which *pure* tin could be used, but at a very early period tin was used for coating iron and copper. Pliny, A.D. 23 seemed to imply that vessels of iron ware were immersed in melted tin, very cleverly done, for the tin coated vessels were scarcely to be distinguished from silver, and he also observed that the coating of tin improved the taste of the food.

Dodd's *British Manufactures* describes the process by which Cornish tin was produced and at the end of the process "the pure tin is cast into granite moulds capable of containing somewhat more than 3 cwt. each.

"These are called blocks, and are sent, according to the provisions of the Stannary laws, to be stamped (or coined as it is termed) by the Duchy officers, and it then comes to the market under the name of block tin." This was mine tin.

A much superior tin was the "Stream tin" known as "grain tin" used for finer purposes, and very brilliant in appearance.

In *A History of the Trade in Tin*, by Philip William Flower it would seem that Tin-Plate has always meant iron or some other metal coated with a layer of tin, not solid tin, and early English patents were "for making iron plates tyinned over, commonly called tyinned plates. . ."

Perhaps other members of EAIA have authority for some other definitions.

